

In re Patent Application of:

FU ET AL.

Serial No. 10/084,798

Filed: **FEBRUARY 27, 2002**

REMARKS

Claims 1 to 25 are currently pending. Claims 1 to 25 have been rejected under 35 U.S.C. 103(a) in view of United States Patent No. 4,787,696 (Norris et al) in combination with United States Patent Application No. 2002/0051268 (Tonehira et al). Claims 3 to 6 and 9 to 13 have been rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claims of the application have been amended to overcome the objections of the Examiner and to better define the invention in light of the prior art. In particular, claims 3 and 9 have been cancelled, and the dependencies of claims 4 and 10 to 13 have been changed to more appropriate claims. Original claims 14 to 25 have been cancelled, and new claims 26 to 33 have been added to ensure all aspects of the invention have been protected. None of the new claims constitutes the addition of new subject matter.

The first occurrence of claim 2 has been canceled.

Claim 1 has been amended to include the features of the first claim 2, claim 9 and claim 11. Accordingly, claim 1 now defines first and second pedestals with the laser and the laser driver mounted thereon, respectively, with an air trench separating the laser and the laser driver, as well as the first and second pedestals. Furthermore, the header is made of a first material, and the first pedestal is made of a second material, which has a higher thermal conductivity than

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the first material. This structure ensures that the heat is transferred away from the laser, and ensures that none of the heat is transferred across to the laser driver. These features are both novel and non-obvious.

In the Norris et al reference the laser 11 is mounted on a silicon carrier member 20, which is mounted on a silicon support structure 40. The laser driver 45 is simply mounted on the support structure 40. The air gap is only provided between the laser driver 45 and the laser 11, i.e. there is no separation between the support structure 40 and the carrier member 20. Accordingly, the flow of heat will not follow separate paths away from the laser 11 and the laser driver 45, but will overlap causing the laser 11 to heat the laser driver 45 and vice versa. Moreover, the support structure 40 and the carrier member 20 are both constructed of the same material, i.e. Silicon, thereby not providing the thermal benefits of the present invention.

The passage referenced in the Tonehira et al reference discloses the use of "separate members" for the laser and the laser driver to "provide thermal isolation". This reference does not disclose the use of a multi-layer structure, i.e. a header on top of a pedestal, in which the pedestal has a higher thermal conductivity than the header.

Claims 11 and 12 now define a multi-layer first pedestal and a multi-layer hybrid subassembly, respectively, which enhances the thermal conductivity of the system.

The summary of the invention section has been amended to reflect the present invention. Several typographical errors

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and omissions have been corrected in the description and the Figures. Figure 3 has been amended to ensure that the lead line for reference numeral 602 correctly identifies the cut-away region. An incorrect reference numeral "1136" has been deleted from Figure 27A. Reference numeral "3304" has been added to Figure 33A, and in Figure 33B, reference numeral "3202" has been replaced by "3102".

As such, it is respectfully submitted that all of the claims remaining in the application are in condition for allowance. Early and favorable consideration would be appreciated.

Should any minor informalities need to be addressed, the Examiner is encouraged to contact the undersigned attorney at the telephone number listed below.

Please charge any shortage in fees due in connection with the filing of this paper, including Extension of Time fees, to Deposit Account No. 50-1465 and please credit any excess fees to such deposit account.

Respectfully submitted,



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CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: M/S AMENDMENT, COMMISSIONER FOR PATENTS, PO BOX 1450, ALEXANDRIA, VA 22313-1450, on this 17 day of September, 2004.

Justin Ferguson

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IN THE DRAWINGS:

Replace the existing set of drawings with the new set of formal drawings attached.